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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/451,965	11/30/99	SENZIG	R 15-CT-4697

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MMC2/0718

EXAMINER

HO, A

ART UNIT

PAPER NUMBER

2882

DATE MAILED: 07/18/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/451,965

Applicant(s)

SENZIG et al.

Examiner

Allen C. Ho

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 November 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-11, 15-21, 24-29, 34 and 35 is/are rejected.
- 7) ☒ Claim(s) 8, 12-14, 22, 23 and 30-33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 November 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:
 - (1) Page 8, line 6, "22" should be replaced by --50--.
 - (2) Page 9, line 4, "as shown in Figure 6," should be deleted.
 - (3) Page 10, line 1, "Figure 5" should be replaced by --Figure 7--.
 - (4) Page 10, line 21, "Figure 7" should be replaced by --Figure 8--.

Appropriate correction is required.

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: MULTIMODE IMAGING SYSTEM FOR GENERATING HIGH QUALITY IMAGES.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "34" has been used to designate both plane of interest and detector elements. Correction is required.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "16" has been used to designate both positioning means and x-ray beams. Correction is required.

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5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "64" has been used to designate both operator console and mass storage. Correction is required.
6. Reference character "46" in Fig. 7 should be positioned next to the table. Correction is required.

Claim Objections

7. Claim 5 is objected to because of the following informalities: Claim 5 refers to a method. Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 2, 5, and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
10. Claims 2, 5, and 19 recite the limitation "an x-ray mode". There is insufficient antecedent basis for this limitation in the claims.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

12. Claims 1-3, 18-20, 24-27, and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Baba *et al.* (U. S. Patent No. 5,598,453).

Baba *et al.* disclosed an imaging system for generating an image of an object (14), the imaging system comprising a base (inherent), a table (9), a positioning means (8) movably coupled to the base, an x-ray source assembly comprising an x-ray source (2) coupled to the positioning means, and a detector assembly comprising a detector (4') coupled to the positioning means, the system configured to enable an operator to select at least one mode of operation (302) consisting of a computed tomography mode and a fluoroscopy mode; rotate the positioning means relative to the base so that the detector assembly and the source assembly are rotated about the object and the table; and generate an image of the object (305, 307).

13. Claims 1-3, 18-20, 21, 24-29, and 35 are rejected under 35 U.S.C. 102(e) as being anticipated by Roos *et al.* (U. S. Patent No. 6,041,097).

Roos *et al.* disclosed an imaging system for generating an image of an object (26), the imaging system comprising a base (14), a table (24), a positioning means (16) movably coupled to the base, an x-ray source assembly comprising an x-ray source (18) coupled to the positioning means, and a detector assembly comprising a detector (20) coupled to the positioning means, the system configured to enable an operator to select at least one mode of operation (30) consisting of a computed tomography mode and a fluoroscopy mode; rotate the positioning means relative to the base so that the detector assembly and the source assembly are rotated about the object and

the table; and generate an image of the object (44). The system is configured to move the detector relative to the x-ray source for changing the magnification (54).

14. Claims 4-6, 7, 9, 10, 15, 16, 18-21, 24-27, and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Grady *et al.* (U. S. Patent No. 4,365,343).

Grady *et al.* disclosed an imaging system for generating an image of an object, the imaging system configured to operate in at least one of a plurality of modes of operation and comprising: a table (T); a source assembly (X) comprising a movable x-ray source; a detector assembly (II) comprising a movable detector; a positioning means (U) comprising a base (L) and an arm (U) coupled to the base for positioning the source assembly and the detector assembly relative to the object, the source assembly movably coupled to a first end portion (U_b) of the positioning means and the detector assembly movably coupled to a second end portion (U_a) of the positioning means; and a controller (inherent) enabling an operator to selectively operate the system in at least one of a plurality of modes.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grady *et al.* (U. S. Patent No. 4,365,343) as applied to claim 4 above, and further in view of Gilblom (U. S. Patent No. 5,949,848).

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Grady *et al.* disclosed an imaging system for generating an image of an object as set forth in claim 4. However, Graday *et al.* taught using an image intensifier. Gilblom disclosed a flat detector panel for x-ray imaging. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a flat detector panel, since a person would be motivated to reduce the size of the detector and to digitize the image data.

17. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grady *et al.* (U. S. Patent No. 4,365,343) as applied to claim 4 above.

Grady *et al.* disclosed an imaging system for generating an image of an object as set forth in claim 4. However, Graday *et al.* taught that the positioning means comprises a U-shaped arm. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ a positioning means comprising a base and a gantry, since a person would be motivated to use a structure that is more rigid in order to stabilize the images.

18. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baba *et al.* (U. S. Patent No. 5,598,453) as applied to claim 18 above.

Baba *et al.* disclosed an imaging system for generating an image of an object as set forth in claim 1. However, Baba *et al.* did not teach that the positioning means comprises a c-arm. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ a c-arm, since a c-arm is mobile and less expensive.

Allowable Subject Matter

19. Claims 8, 12-14, 22, 23, and 30-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

20. The following is a statement of reasons for the indication of allowable subject matter:

The allowable subject matter in claim 8 refers to an imaging system in accordance with claim 4, wherein at least one of the source and the detector configured to move relative to other assembly and the positioning means to alter the plane of interest.

The allowable subject matter in claim 12 refers to an imaging system in accordance with claim 11, wherein at least one detector panel is rotatable relative to the positioning means.

The allowable subject matter in claims 13 and 14 refers to an imaging system in accordance with claim 11, wherein the detector comprises a first detector panel and a second detector panel.

The allowable subject matter in claims 22 and 23 refers to an imaging system in accordance with claim 18, wherein the system is configured to move at least one of the source and the detector relative to the other assembly to alter the plane of interest.

The allowable subject matter in claims 30-33 refers to an imaging system in accordance with claim 26, wherein the detector assembly comprises a first detector panel and a second detector panel, and wherein to collect image data, the system is configured to angularly position the first detector panel relative to the second detector panel.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

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fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- (1) Lange (U. S. Patent No. 6,180,943) describes tomograph acquisition apparatus having a pair of rotatable scintillation detectors.
- (2) Yanof *et al.* (U. S. Patent No. 6,149,592) describe an integrated fluoroscopic projection image data, volumetric image data, and surgical device position data.
- (3) Ivan *et al.* (U. S. Patent No. 6,031,888) describe fluoro-assist feature for a diagnostic imaging device.
- (4) Freeman *et al.* (U. S. Patent No. 5,960,054) describe an angiographic system incorporating a computerized tomographic scanner.
- (5) Barni *et al.* (U. S. Patent No. 5,841,830) describe 3D CT fluoroscopy.
- (6) Bär *et al.* (U. S. Patent No. 5,661,772) describe an x-ray diagnostic apparatus capable of producing CT images and fluoroscopic images.
- (7) Khutoryansky *et al.* (U. S. Patent No. 5,636,259) describe a universal radiographic/fluoroscopic digital room.
- (8) Moore *et al.* (U. S. Patent No. 5,247,555) describe a radiation image generating system and method.

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- (9) Charrier (U. S. Patent No. 4,741,015) describes a universal x-ray apparatus capable of x-ray beaming in a multiplicity of directions.
- (10) Boyd *et al.* (U. S. Patent No. 4,736,396) describe tomosynthesis using high speed CT scanning system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (703) 308-6189. The examiner can normally be reached on Monday - Friday from 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached at (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

Allen C. Ho
July 13, 2001


ROBERT H. KIM
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